

A GENERIC REVISION AND CATALOG OF THE WESTERN HEMISPHERE GLENURINI WITH THE DESCRIPTION OF A NEW GENUS AND SPECIES FROM BRAZIL (NEUROPTERA:MYRMELEONTIDAE)

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ABSTRACT: Studies of the type species of described glenurine genera have led to considerable new synonymy as follows: *Elachyleon* Esben-Petersen 1927 (= *Sericoleon* Esben-Petersen 1932); *Eremoleon* Banks 1901 (= *Incamoleon* Banks 1913, = *Sosa* Navás 1914, = *Cortesius* Navás 1914, = *Dobla* Navás 1926, = *Joergenina* Esben-Petersen 1932, = *Antilloleon* Banks 1943); *Psammoleon* Banks 1899 (= *Diazus* Navás 1914). *Pachyleon alvarengai*, new genus and new species, is described from Mato Grosso, Brazil. Eight genera are now recognized and a key is given for their identification. Each genus is characterized and briefly discussed, including new synonyms. A complete bibliography and catalog is provided for the Western Hemisphere Glenurini. New information contained in this catalog includes the following new species synonyms: *Psammoleon cautus* (Walker) 1853 (= *Feinerus nebulosus* Navás 1922); *Psammoleon serrei* (Navás) 1920 (= *Formicaleo chaperi* Navás 1922); *Glenurus peculiaris* (Walker) 1859 (= *Glenurus brasiliensis* Navás 1920); *Eremoleon macer* (Hagen) 1861 (= *Hesperoleon atomarius* Navás 1933). Also a number of new combinations are indicated. The tribe Dimarellini Markl 1954 is now considered a synonym of the Glenurini Banks 1928. The tribe Glenurini is now referred to the subfamily Myrmeleontinae.

INTRODUCTION

The tribe Glenurini is one of the largest tribes of antlions in the world in numbers of described genera. Markl (1954:246) lists 30 genera of Glenurini from all major zoogeographical regions of which sixteen are restricted in distribution to the Western Hemisphere. However, no modern comprehensive generic study has ever been made of the Glenurini. Furthermore the definition of the tribe is probably deficient judging from the paucity of taxonomic characters given by Markl (1954, p. 245) and earlier authors. The present account deals only with the glenurine genera of the Western Hemisphere. An attempt is made to signal taxonomic characters of importance and to point out the variation that exists in others that have been used in the classification of the tribe. Terminology is adopted from Stange (1970).

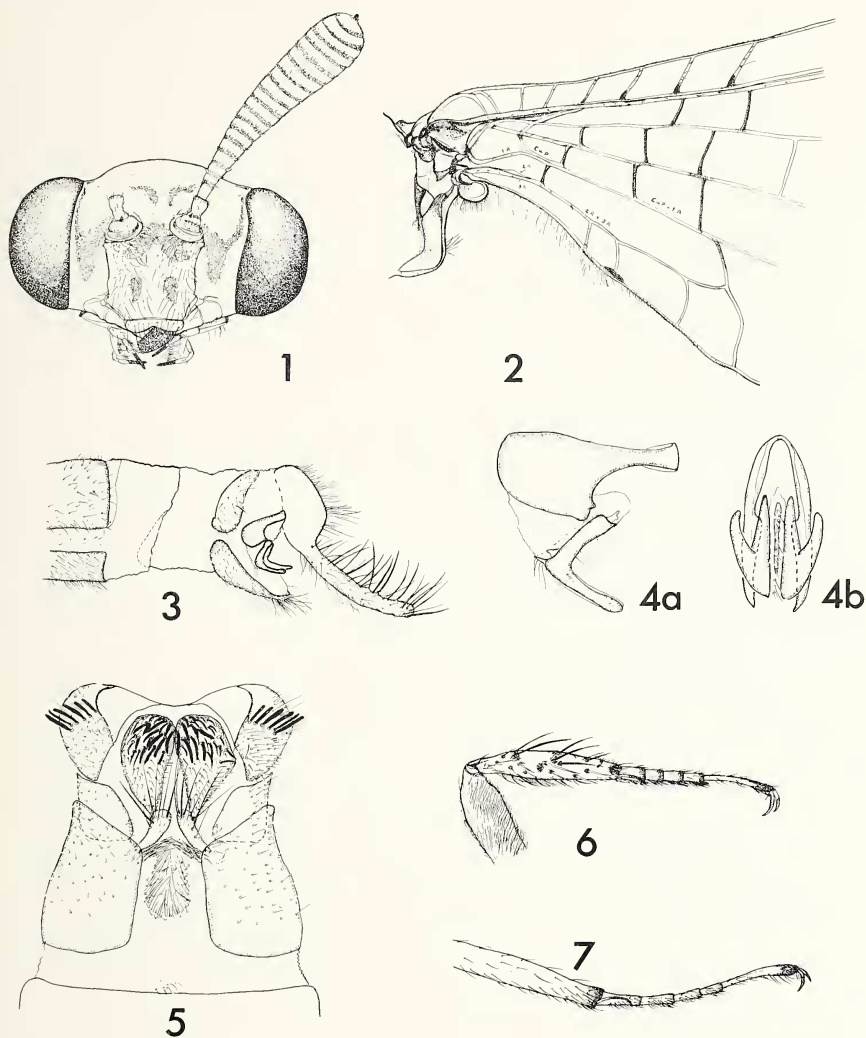
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SYSTEMATIC POSITION OF THE GLENURINI

Banks (1943, p. 166) classified genera of the Glenurini in the subfamily Macronemurinae. Markl (1954) published a comprehensive world classification of the Myrmeleontidae but eliminated subfamilies and only dealt with tribes. Stange (1968) placed the Glenurini in the subfamily Dendroleontinae. My attempts to provide a satisfactory definition of the Dendroleontinae from the Myrmeleontinae have now convinced me that this separation can not be maintained. Therefore I consider the subfamilies Dendroleontinae and Macronemurinae to be synonyms of the Myrmeleontinae. Essentially only two venational characters have been employed in the past for separating these subfamilies. One is the condition of vein 2A of the forewing. In some groups (*Dendroleon* and *Brachynemurus*) vein 2A is evenly curved from its base to its termination whereas it is strongly angled in *Myrmeleon* L, *Macronemurus* (an old world genus), and in nearly all of the Glenurini. However the close struc-



Figures 1-7: *Pachyleon alvarengai*. 1. Head of holotype. 2. Base of forewing. 3. Male terminalia (right ectoproct removed). 4. Male genitalia (a) side view; (b) posterior view. 5. Female terminalia, ventral view. 6. Foreleg of holotype, apex of femur, tibia and tarsus. 7. Hindleg of holotype, apex of tibia and tarsus.

tural resemblance between *Dendroleon* and some genera of the Glenurini (i.e. *Glenurus*) argues against such an extreme separation. Furthermore vein 2A shows some variation in the Glenurini. In a new genus to be described later in this paper, vein 2A is closely associated with 3A and not with 1A as is typical in the tribe. Also in an undescribed species (*Mystroleon praedator* Sensu Banks) vein 2A is intermediate in condition between typical Glenurini and Dendroleontini. For these reasons I consider this character insufficient for separating subfamilies. The second venational character that has figured prominently in subfamily classifications is the number of hindwing presectoral cross veins. In the Myrmeleontinae there are four or more such crossveins whereas the typical number in the Dendroleontinae is one. However, within the tribe Brachynemurini, which I consider closely related to the Glenurini, there are sometimes several crossveins depending upon the point of origin of the radial sector. This indicates that the number of presectoral crossveins is of limited value as a subfamily character.

Markl (1954) recognizes numerous tribes that are referable to the Myrmeleontinae. Probably many of these are invalid. Markl defines the Glenurini almost entirely on wing venational characters some of which I have found to be variable. Markl emphasizes the forking of forewing veins 2A and 3A. In the Glenurini, Nyutini (restricted to Africa) and Dimarellini (restricted to the Neotropical Area), vein 2A is forked and 3A is simple. Other related tribes, all restricted to the Eastern Hemisphere, have vein 2A simple and 3A forked. This condition is given for the Formicaleontini, Creoleontini, Obini, Nemoleontini and Protoplectrini. However this character is variable, even at the specific level in some instances. In the glenurine genus *Eremoleon*, most species fit the concept of Markl (vein 2A forked, 3A simple in *insipidus*, *longior*, etc.) but other species show the opposite condition (as in some *nigribasis*). Therefore this character is of limited taxonomic importance. Another venational character that Markl uses in differentiating the Glenurini (from the Dimarellini and Nyutini) is the presence of the anterior banksian line. This prominent longitudinal line is found in either wing and is formed by the bending of the branches of the radial sector. It is highly variable in its development in the genus *Brachynemurus*, a member of the related tribe Brachynemurini. In the tribe Glenurini, nearly all of the Western Hemisphere species that I have examined show no development of the banksian lines. It is apparent that Markl was in error employing this character in the diagnosis of the Glenurini (at least the Western Hemisphere component).

Markl (1954, p. 247) defined the tribe Dimarellini on venational characters which Stange (1963, p. 810) criticized. Stange offered the character of the pretarsal claws as a possible means of separating the Dimarellini from the Glenurini. With this new criterion the genera *Elachyleon* and *Navasoleon* were removed from the Glenurini and placed with *Dimarella* in the Dimarellini. In these three genera the pretarsal claws are capable of closing against the distal

tarsomere whereas the claws are ordinary in other genera. However it is now apparent that this specialized condition of the pretarsal claws have evolved several times in unrelated groups of Myrmeleontidae as evidenced by the occurrence of this character in the Dendroleontini (*Tricholeon* Esben-Petersen from Africa; *Froggattisca* Esben-Petersen from Australia) and in the Glenurini (*Megistopus* Rambur from Europe). The genus *Elachyleon*, possessor of the specialized pretarsal claws, agrees with the glenurine genus *Eremoleon* in all generic level taxonomic characters except the condition of the pretarsal claws. Thus, I now consider the pretarsal claw character to be a generic character. In search of a possible new means of maintaining the tribe Dimarellini I have reconsidered all the specialized features of the genus *Dimarella*. The members of this genus differ from other Glenurini in the following characters: (1) wing venation (CuP + 1A run parallel with the posterior fork of forewing CuA); (2) antennal fossa widely separated from eye; (3) male ectoproct with elongate postventral lobe; (4) form of the male gonarcus (large lateral expansions) and shape of the parameres (not in the form of flat plates). A new genus to be described later in this paper also shares these characters (but has ordinary pretarsal claws). However recent study of the poorly known species *Psammoleon-cautus* has revealed that this species is intermediate between the genus *Dimarella* and the glenurine genus *Psammoleon*. This species appears to be a rather ordinary *Psammoleon* in regards to the wing venation, head structure and legs but possesses the elongate postventral lobe of the male ectoproct as in *Dimarella* as well as comparable development of the male gonarcus and parameres.

From the foregoing discussion it is apparent that we are confronted with a weak tribal classification of the Myrmeleontinae. More study is needed of the Old World genera of the Glenurini as well as of the related Old World tribes Formicaleontini, Creoleontini, Obini, Nemoleontini, Protoplectrini and Nyutini before a satisfactory world-based classification can be given. The new world tribe Dimarellini can not be maintained and I now consider *Dimarella* as a rather specialized genus of the Glenurini.

In the Western Hemisphere there is less diversity in the Myrmeleontinae, at least from the point of view of described tribes. The following key will distinguish the Glenurini from other Western Hemisphere groups of antlions.

1. Sensory pit of the distal labial palpomere slitlike; hindleg with femoral sense hair or femoral sense hair absent.....*Palparinae* and *Acanthaclisinae*
Sensory pit of the distal labial palpomere oval-shaped; femoral sense hair present on foreleg and midleg (except few species of *Brachynemurus*) but not on hindleg.....(*Myrmeleontinae*) 2
2. Forewing vein 2A evenly curved from base to hind margin, widely separated from 3A at least at basal one-half.....*Dendroleontini* and *Brachynemurini*
Forewing vein 2A runs close to vein CuP + 1A for a short distance, then

- abruptly angles toward hind margin or veins 2A and 3A closely associated.... 3
3. Radial sector of hindwing arises beyond cubital fork, four or more presectoral crossveins present; pilula axillaris present.....*Myrmeleontini* and
.....*Porrerini*
Radial sector of hindwing arises well before cubital fork, one (rarely two or three) presectoral crossveins present; pilula axillaris absent.....*Glenurini*

WESTERN HEMISPHERE GENERA OF THE GLENURINI

All of the glenurine genera known from the Western Hemisphere are restricted to that area. It is possible that this reflects the regionalism of former workers on this group since no modern world study has been made. Even the Nearctic and Neotropical faunas of the Glenurini have not been treated together. Banks provided keys to the Nearctic genera (1928) and the Neotropical genera (1943). The Nearctic fauna is relatively small. The three genera represented in this region are also found in both the North American and South American Neotropical areas. All of the new world glenurine genera are found in South America and three of these are restricted to that continent. Twenty-four generic names have been proposed for the Western Hemisphere Glenurini. Some of these have been placed in synonymy. My study of nearly all of the type species of Western Hemisphere genera of the Glenurini has led to the discovery of further generic synonymy. In the following account of the glenurine genera this synonymy will be discussed.

Araucaleon Banks

Araucaleon Banks, 1938. Proc. Ent. Soc. Wash. 40:127.

Type-species: *Araucaleon inca* Banks, by original designation.

Description: Antennal fossa separated from ocular rim by less than greatest diameter of pedicel; antenna long and slender; pronotum longer than wide; mesoscutellum smaller than metanotum; all legs about equal in length; tibial spurs longer than forecoxal length; pretarsal claws not capable of closing against distal tarsomere; forewing with anterior margin abruptly angled and swollen near coalescing of subcostal and radial veins, costal area at this point nearly twice as high as at middle of wing; forewing radial sector originates well basad to forking of CuA; posterior fork of forewing vein CuA at an oblique angle to hind margin; forewing vein 2A widely separated from normal 3A before strong angle; hindwing vein CuA ends well before midpoint to forking of MP₂; male ectoproct simple, without postventral lobe; male paramere in form of rigid plate; male gonarcus not greatly expanded laterally.

Discussion: This genus is rare in collections. I have seen only two males of the type-species. In addition, *Glenurus withycombei* Esben-Petersen, described from Trinidad, belongs to *Araucaleon*. This species is known only from the holotype female. This genus appears to be allied with *Eremoleon* Banks

but differs from that genus and other known glenurine genera by the swelling of the forewing costal margin near the point of coalescing of the subcostal and radial veins and by the termination of vein CuA of the hindwing well before the midpoint between the wing base and forking of MP_2 .

Dimarella Banks

Dimarella Banks, 1913. Trans. Amer. Ent. Soc. 39:229.

Type-species: *Eremoleon angustus* Banks, by original designation.

Description: Antennal fossa separated from ocular rim by more than greatest diameter of pedicel; antenna variable in length; pronotum wider than long; mesoscutellum as long as metanotum; legs different in lengths, often midleg shortest; tibial spurs much shorter than forecoxal length; pretarsal claws capable of closing against distal tarsomere; forewing with anterior margin evenly curved toward apex, costal area at point of coalescing of subcostal and radial veins usually lower than at middle of wing; forewing radial sector originates well beyond forking of CuA; forewing vein $CuP + 1A$ runs parallel with posterior branch of CuA for a long distance; forewing vein 2A usually widely separated from normal 3A before strong angle toward posterior margin; hindwing vein CuA ends near forking of MP_2 ; male ectoproct with elongate post-ventral lobe; male paramere with hook; male gonarcus expanded laterally as a round plate; female ectoproct with strong digging setae ventrally, shorter than on lateral gonapophyses.

Discussion: *Dimarella* is limited to the Neotropical Region. Synonymical notes on the genus were given by Stange (1963;1968). The Mexican species were revised by Stange (1963). This genus stands apart from other described genera by the prominent postventral lobe of the male ectoproct, the parallel course of veins $CuP + 1A$ and CuA of the forewing and the wide space between the ocular rim and antennal fossa. All of these features are shared with a new genus to be described later in this paper. The specialized pretarsal claws is a morphological trait shared only with *Navasoleon* and *Elachyleon*.

Elachyleon Esben-Petersen

Elachyleon Esben-Petersen, 1927. Ann. Mag. nat. Hist. (Ser. 9) 20:348. Type-species: *Elachyleon punctipennis* Esben-Petersen, by original designation.

Sericoleon Esben-Petersen, 1932. Vidensk. Medd. Dansk. naturh. Foren 94:114. Type-species: *Sericoleon paessleri* Esben-Petersen, by original designation. *New Synonymy.*

Description: Antennal fossa separated from ocular rim by less than greatest diameter of pedicel; antenna long and slender; mesoscutellum shorter than metanotum; all legs about equal in length; tibial spurs shorter than forecoxal length; pretarsal claws capable of closing against distal tarsomere; forewing with anterior margin evenly curved toward apex, costal area at point

of coalescing of subcostal and radial veins either somewhat lower or higher than at middle of wing; forewing radial sector originates only somewhat before forking of CuA or well beyond; posterior fork of forewing vein CuA at an oblique angle to hind margin; forewing vein 2A widely separated from normal 3A before strong angle toward posterior margin; hindwing vein CuA extends nearly to forking of MP₂; male ectoproct simple, without postventral lobe; male paramere in form of rigid plate; male gonarcus not greatly expanded laterally; female ectoproct usually with weak digging setae; posterior gonapophysis longer than wide, digitiform.

Discussion: I have studied one of the paratypes of the type-species of *Sericoleon*, *S. paessleri* Esben-Petersen, described from Chile. This species possesses all of the generic characters of *Elachyleon* and therefore I am placing *Sericoleon* in synonymy with *Elachyleon*. *Elachyleon* can be distinguished from all other Western Hemisphere Myrmeleontidae by the specialized pretarsal claws, except for *Navasoleon* (which lacks tibial spurs) and *Dimarella* (which has forewing veins CuP + 1A and CuA parallel). This genus agrees closely with *Eremoleon* in both morphological and biological characters. I have reared an undescribed species from Mexico and from Argentina. Both species are found in the silt floors of caves. This is the same habitat for various species of *Eremoleon*. *Elachyleon* is now constituted of four described species. The most widespread species, *E. punctipennis* (ranges from Mexico to Argentina) has been illustrated in part by Stange (1963). Additional generic synonymy is given by Stange (1968).

Eremoleon Banks

Eremoleon Banks, 1901. Trans. Amer. Ent. Soc. 27:366. Type-species: *Myrmeleon macer* Hagen, by original designation.

Incamoleon Banks, 1913. Trans. Amer. Ent. Soc. 39:229. Type-species: *Psammoleon punctipennis* Banks, by original designation. *New Synonymy*.

Sosa Navás, 1914. Broteria 12:218. Type-species: *Sosa conspicuus* Navás, by original designation. *New Synonymy*.

Cortesius Navás, 1924. Broteria 21:107. Type-species: *Cortesius genini* Navás, by original designation. *New Synonymy*.

Dobla Navás, 1926. Deutsch. ent. Zeitschr. :428. Type-species: *Dobla arcuata* Navás, by original designation. *New Synonymy*.

Joergenia Esben-Petersen, 1932. Vidensk. Medd. Dansk. naturh. Foren 94:118. Type-species: *Joergenia pulchra* Esben-Petersen, by original designation. *New Synonymy*.

Antilloleon Banks, 1943. Bol. ent. venezolana 2:168. Type-species: *Glenurus cerverai* Navás, by original designation. *New Synonymy*.

Description: Antennal fossa separated from ocular rim by less than great-

est diameter of pedicel; antenna long and slender; pronotum variable, usually longer than wide; mesoscutellum shorter than metanotum; legs about equal in length except usually hindlegs longer; tibial spurs variable in length, usually shorter than forecoxal length; pretarsal claws not capable of closing against distal tarsomere; forewing with anterior margin evenly curved toward apex, costal area at point of coalescing of subcostal and radial veins usually lower than at middle of wing; forewing radial sector originates somewhat before forking of CuA or well beyond; posterior fork of forewing vein CuA at an oblique angle to hind margin; forewing vein 2A widely separated from normal 3A before strong angle toward posterior margin; hindwing vein CuA extends nearly to forking of MP_2 or somewhat beyond; male ectoproct simple without postventral lobe; male paramere in form of rigid plate; male gonarcus not greatly expanded laterally; female ectoproct usually with weak digging setae; posterior gonapophysis longer than wide, digitiform.

Discussion: There is considerable new generic synonymy in addition to that reported by Navás (1916) Banks (1928) & Adams (1957, 1958). These new synonyms will be discussed in chronological order.

Incamoleon Banks 1913—The type-species of this genus, *punctipennis* Banks, was originally described in the genus *Psammoleon*. Banks separated this species in its own genus apparently based on the longer, more slender legs of *punctipennis*. Also the wing shape is more slender than in *Psammoleon*. All of these features are found in the genus *Eremoleon*. Banks (1943:166) distinguishes *Incamoleon* from *Eremoleon* (= *Glenopsis* Banks) by the relative length of the tarsomeres. In *Incamoleon* the distal tarsomere is about equal to the other tarsomeres together whereas in *Eremoleon* the distal tarsomere is shorter. However my studies on *Incamoleon punctipennis* have revealed that this tarsomere proportion character is not constant and although useful for identification it is not important enough for generic distinction. Further studies have revealed two characters found in *Incamoleon* that are unknown in other *Eremoleon*. First, there is marked sexual dimorphism. The female wings usually have conspicuous dark spots, whereas the wings are not spotted (or only weakly so) in the males. Also the female genitalia appear somewhat distinct in that the posterior gonapophysis is more inflated than in other members of the genus *Eremoleon*. However I am of the opinion that these two characters are not sufficient to maintain *Incamoleon* as a distinct genus so that I am now referring *punctipennis* to the genus *Eremoleon*.

Sosa Navás 1914—I studied the holotype female of the type-species, *Sosa conspicuus*, in 1962 from the collections of the Vienna Museum. Navás gave few notes in his original description as to the basis of this new genus but did point out that it was related to *Formicaleon* (an old world genus) but with longer and more slender legs and that the genus might belong to the Dendroleontini. However my studies of the holotype revealed no important differences from the current generic concept of *Eremoleon* Banks. *Sosa conspicuus* re-

sembles *Eremoleon macer* (Hagen) except that the wings are more slender. This species is now placed in *Eremoleon*.

Cortesius Navás 1924—I studied the two syntypes of the type-species, *Cortesius genini* Navás, in the Paris Museum in 1964. Navás (1924:107) did not give much information in his original description as to the relationships of this genus except to point to a similarity with the genus *Glenurus* Hagen. My studies revealed that *Cortesius genini* agrees with all generic characters of *Eremoleon*. The only unusual feature of this species is that the forewing costal area is biareolate to triareolate. Interconnected crossveins in the costal area are found otherwise only in the genus *Psammoleon* among the Glenurini.

Dobla Navás 1926—The holotype female of the type-species, *Dobla arcuata* Navás, is located in the Paris Museum. My studies of the holotype indicate that it is a synonym of *Cortesius genini* Navás. Therefore the genus *Dobla* is a synonym of *Eremoleon* Banks.

Joergenia Esben-Petersen 1932—I have just recently received for study the holotype female of the type-species, *Joergenia pulchra* Esben-Petersen, on loan from the Copenhagen Museum. Although this species is quite distinctive by virtue of the unusual narrowing of the wings, especially of the costal area, I have not found characters that would warrant generic separation from *Eremoleon*. There is considerable range in the relative broadening of the costal area in *Eremoleon* and I am of the opinion that *J. pulchra* represents one extreme. The other extreme, broadening of the costal area, is exemplified by *E. genini* (Navás) and *E. anomalus* (Rabur), whereas intermediate conditions are found in *E. conspicuus* (Navás), *E. gracile* Adams and many others. I have also seen an undescribed species of *Eremoleon* from Venezuela which has the costal area nearly as narrow as in *J. pulchra*.

Antilloleon Banks 1943—I have studied the type material of the type-species, *Glenurus cerverai* Navás, in the collections of the Museum of Comparative Zoology, Harvard University. Banks (1943:167) pointed out the unusual venational feature present in the Caribbean species. The radial sector originates only a little beyond the level of forking of CuA in the forewing. In most other species of the Glenurini the radial sector originates well beyond the forking of CuA. However in the genus *Araucoleon* Banks, the radial sector originates well before the forking of CuA, a peculiarity in the Glenurini. In other respects *A. cerverai* Navás agrees well with species of the genus *Eremoleon*. Considerable variation is present in the genus *Eremoleon* in the relative position of the origin of the radial sector and forking of CuA. I am, therefore, of the opinion that *Glenurus cerverai* belongs to the genus *Eremoleon*, *Antilloleon* thus falling as a synonym of *Eremoleon*.

Revisionary studies are needed of the genus *Eremoleon* which appears to be a complex taxon. Adams (1957) presented a key to most of the Nearctic species. There is no one key character of the genus which permits easy recognition, although the genus differs considerably from other glenurine genera

except *Elachyleon* Esben-Petersen, which has specialized pretarsal claws. I have reared four species of *Eremoleon* (from Arizona, Mexico and Argentina) and all exhibit similar biological characteristics. The larvae live in the silt of caves or rock crevices and seem to be good climbers.

Glenurus Hagen

Glenurus Hagen 1866. Stettin. ent. Ztg. 27:372.

Type-species: *Formicaleo grata* Say.

Description: Antenna fossa separated from ocular rim by less than greatest diameter of pedicel; antenna long and slender; mesoscutellum shorter than metanotum; all legs about equal in length except hindlegs usually somewhat longer; tibial spurs longer than forecoxal length; pretarsal claws not capable of closing against distal tarsomere; forewing with anterior margin evenly curved toward apex, costal area at point of coalescing of subcostal and radial veins somewhat lower or higher than at middle of wing; forewing radial sector originates well beyond forking of CuA; posterior fork of forewing vein CuA at an oblique angle to hind margin; forewing vein 2A widely separated from normal 3A before strong angle toward posterior margin; hindwing vein CuA extends nearly to or somewhat beyond forking of MP₂; male ectoproct simple without postventral lobe; male paramere in form of rigid plate; male gonarcus not greatly expanded laterally; female ectoproct with prominent digging setae; posterior gonapophysis weakly produced as a swelling.

Discussion: This is a very homogeneous genus easily recognized by the considerable brown suffusion of the wing apices. *G. heteropteryx* is the only known species that lacks this prominent suffusion in the forewing, although the hindwing conforms with the rest of the genus. Structurally *Glenurus* seems close to *Eremoleon* but differs from that genus as well as all other glenurine genera in having the posterior gonapophysis poorly developed. Banks (1922) has provided a key to the South American species and (1928) to the Nearctic species.

Navasoleon Banks

Navasoleon Banks 1943. Bol. ent. Venez. 2:168. Type-species: *Gymnocnemia boliviana* Banks, by original designation.

Description: Antenna fossa separated from ocular rim by less than greatest diameter of pedicel; antenna long and slender; mesoscutellum shorter than metanotum; foreleg (at least females) much longer than midlegs and hindlegs; tibial spurs absent; pretarsal claws capable of closing against distal tarsomere; forewing with anterior margin evenly curved toward apex, costal area at point of coalescing of subcostal and radial veins lower than at middle of wings; forewing radial sector originates well beyond forking of CuA; posterior fork of forewing vein CuA at an oblique angle to hind margin; forewing vein 2A widely separated from normal 3A before strong angle toward posterior margin;

hindwing vein CuA extends somewhat beyond forking of MP_2 ; female ectoproct with small digging setae; posterior gonapophysis swollen thumb-like.

Discussion: *Navasoleon* is a poorly known genus and male specimens are unavailable for study. The genus appears very distinct. The lack of tibial spurs is diagnostic and the specialized pretarsal claws is found only in *Elachyleon* and *Dimarella*. In the type-species of the genus and also in an undescribed species the foreleg is unusually long. The species known from Argentina has shorter front legs but the specimen is damaged to such an extent that the sex is undeterminable.

***Pachyleon* Stange, new genus**

Diagnosis: This genus is distinguished from other glenurine genera in the Western Hemisphere except *Dimarella* by the following characters: (1) forewing vein 2A is closely associated with vein 3A for its entire course (see Fig. 2); (2) radial and subcostal veins in both wings crowded together; (3) antennal fossa separated by more than greatest diameter of scape from ocular rim; (4) forewing veins CuP + 1A and posterior branch of CuA run parallel for a long distance. *Pachyleon* is closely allied to *Dimarella* but differs from that genus in two important characters: (1) pretarsal claws simple in *Pachyleon*, specialized in *Dimarella* (capable of closing against tarsomere); (2) hindwing broadly triangular in *Pachyleon* (greatest breadth about equal to forewing) whereas it is more slender in *Dimarella* (greatest breadth of hindwing much less than that of forewing). The structural gap between *Pachyleon* and *Dimarella* would be even greater if it were not for a recently discovered (apparently undescribed) species of *Dimarella* which has the condition of forewing vein 2A (closely associated with 3A) very similar to that in *Pachyleon*. *Pachyleon* and *Dimarella* share so many characters that are not found in almost all other Glenurini that they form a group apart. However *Psammoleon cautus* (Walker) represents an intermediate type between *Psammoleon* and these two genera. The unusual shape of the hindwing of *Pachyleon* provides a key character for the genus. It remains to be seen whether or not the broad hindwing is of generic or specific importance since considerable variation exists in the relative broadening of the hindwing in the allied genus *Dimarella*.

Description: Antennal fossa separated from ocular rim by more than greatest width of antennal scape; antenna short and thick; pronotum much broader than long; thorax depressed, mesoscutellum as long as metanotum; foreleg moderately short and thickened, midleg greatly swollen and short, hindleg relatively long, about twice as long as foreleg; tarsomeres of foreleg and midleg about equal, those of hindleg much longer; tibial spurs present, much shorter than forecoxal length; pretarsal claws not capable of closing against distal tarsomere; femoral sense hair of foreleg short, much less than one-half length of femur; banksian lines absent; subcostal and radial veins crowded together, nearly touching well before their apical fusion; forewing

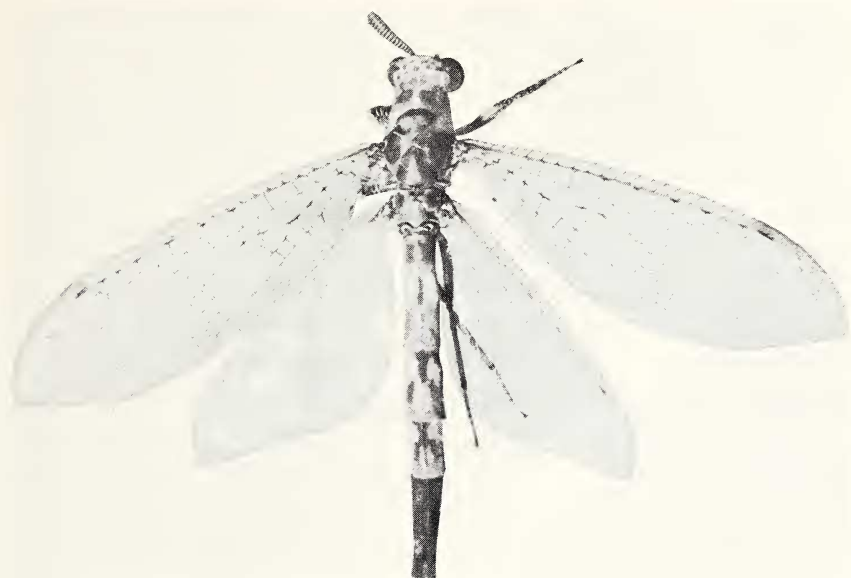


Figure 8. Photo of holotype (male terminalia removed).

vein $CuP + 1A$ runs parallel with posterior branch of CuA for a long distance; forewing vein $2A$ widely separated from $1A$, closely associated and almost fused with vein $3A$, not greatly angled; male ectoproct with elongate postventral lobe; male genitalia not rigid, paramere with hook; gonarcus expanded laterally as a large round plate; female ectoproct simple with strong digging setae ventrally; lateral gonapophyses separated, with longer digging setae than on ectoproct; posterior gonapophysis digitiform, longer than wide.

The generic name is from the Greek words *Pachys* meaning wide and *leon* meaning lion, in reference to the broad wings, pronotum and head. The following new species is the type-species of the genus.

***Pachyleon alvarengai* Stange, new species**

Diagnosis: As the only species in the genus, the generic characters serve to distinguish this species. The unusually short and broadened wings, especially the rather triangular hindwing (see Fig. 8) is distinctive among all known species of ant-lions in the Western Hemisphere. This unusual hindwing shape is also unknown to me in Old World species but I do not have a perfect knowledge of the Old World fauna. The most similar species is a *Dimarella* (probably undescribed) in which the wings are similar in shape although not as extreme as in *P. alvarengai* and in which vein $2A$ is closely associated with vein $3A$.

Description (Holotype male): Length of body about 19 mm, forewing 15 mm, hindwing 11 mm, greatest wing width (about equal in forewing and hindwing) 4.75 mm.

Color: Face (Fig. 1) pale yellowish with Δ -shaped dark brown mark at middle below antennae and crescent-shaped dark brown mark above each antenna, sublateral spot on each side of clypeus, larger dark brown area laterad of antenna toward eye, extending ventrally and dorsally nearly to first row of vertex scars; vertex with grayish bloom, scar pattern about as in Fig. 8; antenna with scape and pedicel pale yellow with dark brown behind, flagellomeres dark brown basally and much paler distally; maxilla and labius nearly all pale yellow except distal palpomere and cardo with dark brown; postgena mostly dark brown; pronotum mostly dark brown with grayish bloom interrupted by irregular paler areas; notum II and III dark brown with grayish bloom, darker velvety areas as follows: submedial triangular area on each side of prescutum II; dark brown oval spot each side of middle and touching, surrounded by golden colored microtrichia on prescutum III; large curved dark brown mark sublaterally near anterior margin of scutum; postscutellum II and III nearly all black; cervical sclerites pale yellow; pleuron and sternum mostly dark brown with grayish bloom, paler brown areas mostly in front of midcoxa and hindcoxa, mesopleural wing process yellowish; forecoxa mostly pale brown, other coxae darker brown; forefemur pale brown with numerous dark brown spots, spots becoming confluent on most of exterior face and on distal one-third of closing face; foretibia pale brown with dark brown spots and small dark brown stripes at basal one-third of exterior face, larger dark brown areas at middle, mostly complete but smaller apical rings, dark brown areas interconnected along closing face; midtibia and midfemur with large, mostly separated dark brown spots on exterior face, somewhat denser and forming short transverse dark brown bands on closing face of tibia, subapical interrupted dark brown ring on femur, solid dark brown one on tibia; hindfemur pale brown with dark brown spots at setal bases, infuscated between spots especially on exterior face, large subapical dark brown band; hindtibia pale brown with large, mostly separated dark brown spots at setal bases on closing face, small dark brown stripe near base, spots becoming more stripelike distally, exterior face nearly all pale brown except dark brown apical ring and smaller dark brown area toward base; tarsi of all legs similarly patterned, pale brown with apical dark brown ring on tarsomeres; wings nearly without suffusion, pale white stigmal area preceded by small darkish brown area in forewing; wing veins mostly pale brown, especially hindwing, with dark brown streaks along longitudinal veins principally at crossvein junctions, many crossveins dark brown especially apically in forewing; abdomen with tergites mostly pale brown with complicated pattern formed by dark brown areas (see Fig. 8), sternites mostly dark brown with a prominent although narrow median longitudinal pale brown line.

Chaetotaxy: Head with few prominent setae except on most of clypeus, white ones on dark brown areas of frons, longer ones on labrum and many long white setae on mentum and stipes; vertex with few inconspicuous appressed dark setae; pale with very sparse, short dark brown setae; pronotum with some short setae on disc, longer dark brown ones at lateral and posterior margin; row of five long white setae on each side of middle along anterior margin of scutum II, several smaller dark brown setae on prescutum II, elsewhere nearly absent or very short; pleuron and coxa with rather conspicuous long white hairlike setae; forefemur with dense, mostly appressed white setae on exterior surface, some black and some white erect setae distally, closing surface with fewer setae and with more black ones; foretibia with subbasal row of three black bristles, followed by another similar row, then one of two bristles and finally a subapical black bristle on exterior face, interspersed with shorter, mostly dark setae, closing surface with many stout setae, predominately white; midfemur with row of white bristles on exterior surface, many other setae elsewhere but more hairlike and white; midtibia with mostly black setae of various sizes, larger black ones toward apex of lateral face, larger white ones near base of median face; hindfemur with many short, mostly appressed white setae; hindtibia with many setae along closing surface, white ones mostly concentrated in middle, exterior surface nearly without setae, only a few scattered minute ones; femoral sense hair of foreleg and midleg shorter than width of femur at that point; tarsi with rather dense, dark brown setae on closing surface flanked (typically) on the four basal tarsomeres by one white seta near apex, exterior surface with fewer setae, especially hindtarsus; abdomen with only microsetae on tergites I-V; starting with tergite VI, dark brown setae mostly laterally increasing in abundance toward terminalia; sternites with numerous, mostly white hairlike setae; postventral lobe with rather prominent black bristles toward apex (Fig. 3).

Structure: Head with vertex not much raised above eyes; greatest ocular width about one-third interocular distance (measured just below antennal fossae); antenna short and rather flattened with 19 flagellomeres, flagellomere I longer than wide, II about 1.5 times wider than long (in flat view) with increasing width toward apex; distal palpomere of labius rather slender, not much swollen, sensory pit oval and close to base; pronotum about twice as wide as long; femur of all legs broadened beyond base, tibia much more slender except midtibia, which is subequal to midfemur; midleg much shorter than either foreleg or hindleg; wing venation and shape as in Fig. 8; abdomen shorter than forewing, segments larger basally, decreasing in diameter beginning with segment IV; tergites I-V and sternite II with numerous scalelike spicules; terminalia as in Fig. 3, genitalia as in Figs. 3 and 4.

Types: Male holotype and 1 female paratype from Jacaré (N. Xingu), Mato Grosso, Brazil, XI 1961, M. Alvarenga collector 52° 24' W; 12° 00' S.

Holotype deposited in the collections of the Los Angeles County Museum of Natural History. Paratype female retained in the author's collection.

Variation: The female paratype agrees well in color, chaetotaxy and structure with the male except that the scalelike spicules on the abdomen are lacking. Female terminalia as in Fig. 5.

Discussion: This species is dedicated to Moacir Alvarenga, Brazilian coleopterist, for his efforts in securing critical ant-lion material from Brazil. The holotype male upon arrival at the depository was found damaged in transit. Most of the broken parts (pieces of wings, legs and antenna) are associated with the specimen and no difficulty in identification is foreseen although this was an unfortunate mishap. The photo (Fig. 8) shows the holotype before shipment.

Psammoleon Banks

Psammoleon Banks 1899. Canad. Ent. 31:69. Type-species: *Myrmeleon ingenuus* Walker, by original designation.

Diazus Navás 1914. Broteria 12:220. Type-species: *Diazus clavatus* Navás, by original designation.

Description: Antennal fossa separated from ocular rim by much less than greatest diameter of scape; antenna variable; pronotum wider than long; mesoscutellum smaller than metanotum; legs about equal in length, hindleg sometimes longer than foreleg; tibial spurs variable, usually shorter than fore-coxal length; pretarsal claws not capable of closing against distal tarsomere; forewing with anterior margin evenly curved toward apex, costal area at point of coalescing of subcostal and radial veins lower than at middle of wing; forewing radial sector originates well beyond forking of CuA; posterior fork of forewing vein CuA at an oblique angle to hind margin; forewing vein 2A widely separated from normal 3A before strong angle toward posterior margin; hindwing vein CuA extends nearly to forking of MP₂ or somewhat beyond; male ectoproct simple without postventral lobe, except in *P. cautus* (Walker); male paramere in form of rigid plate (except *cautus*); male gonarcus not greatly expanded laterally (except *cautus*); female ectoproct without digging setae (sometimes long bristles present), often produced ventrally as a lobe; posterior gonapophysis well developed, often somewhat inflated.

Discussion: I studied the holotype male of the type-species of *Diazus* (*D. clavatus* Navás) in 1962 on loan from the Vienna Museum. The specimen is in good condition except that the hindlegs and abdominal terminalia are missing. My studies of this type indicate that *D. clavatus* is a typical *Psammoleon*, rather similar to *Psammoleon minor* Banks. Navás (1914:220) gave few remarks concerning the diagnostic features of *Diazus* except to point to a relationship with *Incamoleon* and *Glenopsis*. Probably the swollen femora of *D. clavatus* prompted him to consider this species generically distinct. However it is clear that *Diazus* is a synonym of *Psammoleon*.

The genus *Psammoleon* is the largest genus in the Western Hemisphere Glenurini, with twenty-seven described species. Also I have seen a number of undescribed species, mainly from Mexico. Most species are found in North America. The genus is unknown south of Mato Grosso, Brazil. The long forefemoral sense hair (over one-half length of femur) is diagnostic. Also the rather swollen forefemur is characteristic except for *Pachyleon* and *Dimarella*. *P. cautus* (Walker) is intermediate between *Psammoleon* and *Dimarella* and perhaps should be placed in a distinct genus. However this situation suggests a relationship between these genera. The modified female ectoproct in many species of *Psammoleon* is also without known counterpart among Western Hemisphere Glenurini. Considerable variation is present between species in the development of the tarsus, forewing costal area and in chaetotaxy.

KEY TO GENERA OF WESTERN HEMISPHERE GLENURINI

1. Pretarsal claws capable of closing against distal tarsomere..... 2
 Pretarsal claws not capable of closing against distal tarsomere..... 4
2. Posterior fork of forewing vein CuA and vein CuP + 1A parallel with each other and hind margin for a long distance; antennal fossa separated by more than greatest width of antennal pedicel from ocular rim; male ectoproct with elongate postventral lobe.....*Dimarella*
 Posterior fork of forewing vein CuA at an oblique angle to hind margin; antennal fossa separated by less than greatest width of antennal pedicel from ocular rim; male ectoproct without elongate postventral lobe..... 3
3. Tibial spurs present; foreleg about equal or shorter than hindleg..*Elachyleon*
 Tibial spurs absent; foreleg (at least in female) usually longer than hindleg *Navasoleon*
4. Antennal fossa separated by more than greatest width of antennal pedicel from ocular rim; hindwing about twice as long as wide, much shorter than forewing (Fig. 8); forewing vein 2A closely associated with 3A, not much angled (Fig. 2); subcostal and radial veins of both wings nearly touching, especially before their apical fusion; male ectoproct with elongate postventral lobe.....*Pachyleon*
 Antennal fossa separated by less than greatest width of antennal pedicel from ocular rim; hindwing over three times longer than wide, about equal in length to forewing; forewing vein 2A widely separated from normal 3A before strong angle toward hind margin; subcostal and radial veins widely separated until their apical fusion; male ectoproct without postventral lobe (except *P. cautus*)..... 5
5. Forewing with anterior margin abruptly angled and swollen near coalescing of subcostal and radial veins, costal area at this point nearly twice as wide as at middle of wing; hindwing vein CuA ends well before midpoint to forking of MP₂; forewing radial sector originates well basad to forking of CuA*Araucoleon*

- Forewing with anterior margin evenly curved toward apex, costal area at point of coalescing of subcostal and radial veins usually somewhat narrower than at middle of wing; hindwing vein CuA extends nearly to forking of MP₂ or beyond; forewing radial sector originates near or well beyond forking of CuA..... 6
6. Forefemur swollen, at widest point much wider than interantennal distance, with abundant pubescence, especially on closing surface; femoral sense hair or foreleg elongate, over one-half length of femur; female ectoproct often with ventral projection.....*Psammoleon*
Forefemur slender and elongate, at widest point about equal at most to interantennal distance, with sparser pubescence; femoral sense hair of foreleg less than one-third length of femur; female ectoproct not produced ventrally 7
7. Apical one-fifth of hindwing and usually forewing with predominant dark brown suffusion in marked contrast to basal one-fifth; posterior gonapophysis of female weakly produced as a swelling.....*Glenurus*
Apical one-fifth of wings predominantly transparent, sometimes many scattered dark brown spots present; posterior gonapophysis of female well developed, digitiform.....*Eremoleon*

SYNOPTIC CATALOG OF THE WESTERN HEMISPHERE GLENURINI
WITH TYPE INFORMATION

Genus **Araucoleon** Banks

- Araucoleon* Banks 1938b:127. Type-species: *Araucoleon inca* Banks, orig. design.
inca Banks 1938b:128. Hol. ♂, Huachi, Bolivia, IX.1925 (USNM).
withycombei (Esben-Petersen) 1927:347 (as *Glenurus*). Hol. ♀, St. Augustine, Trinidad, VI. 1924 (BM). *New Comb.*

Genus **Dimarella** Banks

- Dimarella* Banks 1913a:229. Type-species: *Eremoleon angustus* Banks, orig. design.
= *Nobra* Navás 1915b:6. Type-species: *Nobra martinsi* Navás, orig. design.
= *Furgus* Navás 1921:51. Type-species: *Nobra riparius* Navás, orig. design.
= *Myroleon* Banks 1924:436. Type-species: *Myrmeleon praedator* Walker.
Taxonomy: Banks (1943:166); Stange (1963:810-812; 1968:59).
angusta (Banks) 1908:31 (as *Eremoleon*). Hol. ♀, Santa Elena, Ecuador (MCZ).
= *Nobra nevermanni* Navás 1936:167. Syntypes, Costa Rica, Farm Hamburg am Reventazon, V.2.1934 (Zaragoza).
Taxonomy: Banks (1913a:230; 1943:168); Stange (1963:812).

- Distribution: Neotropical (Costa Rica, Colombia, Ecuador, Venezuela, Brazil, Peru).
- campestris* (Navás) 1930:107 (as *Furgus*). Hol. ♂, Guayaquil, Ecuador 1930 (Barcelona). *New Comb.*
- garciai* (Navás) 1932:12 (as *Nobra*). Hol. ♀, Vinces, Ecuador (Turin). *New Comb.*
- martinsi* (Navás) 1915b:6 (as *Nobra*). Hol. ♀, Río Purús, Brasil 1904 (Paris). Taxonomy: Stange (1963:812).
- menkei* Stange 1963:814. Hol. ♂, Río Cuchujachi, 10 miles S.E. Alamos, Sonora, Mexico, V.22.1962 (CAS).
- praedator* (Walker) 1853:391 (as *Myrmeleon*). Hol. ♀, Santarem, Brazil (BM).
- Taxonomy: Hagen (1860:364); Stange (1963:812).
- psammophila* Stange 1963:814. Hol. ♀, Veracruz, Mexico, IV.29.1962 (CAS).
- riparius* (Navás) 1918b:16 (as *Nobra*). Lect. ♂, Santa Fe, Argentina, I.9.1917 (Barcelona).
- =*Dimarella pallida* Navás 1933a:89. Hol. ♀, S. Miguel, Argentina, XI.25.1932 (Barcelona).
- Taxonomy: Stange (1968:59).
- Distribution: Neotropical (Uruguay, Argentina).
- silvaicus* (Navás) 1918b:6 (as *Nobra*). Hol. ♀, Mato Grosso, Brasil (La Plata). *N. Comb.*
- tarsalis* (Guilding) 1829:47 (as *Formicaleo*). Type (?s), ?Demerara (not located).
- =*Myrmeleon efferus* Walker 1853:388. Hol. ♀, Para, Brazil (BM).
- Taxonomy: Hagen (1860:364); Banks (1913a:229; 1913b:86; 1943:168); Stange (1963:812).

Genus **Elachyleon** Esben-Petersen

- Elachyleon* Esben-Petersen 1927:348. Type-species: *Elachyleon punctipennis* Esben-Petersen, orig. design.
- =*Oroleon* Navás 1927:49. Type-species: *Oroleon serranus* Navás, orig. design.
- =*Sericoleon* Esben-Petersen 1932:114. Type-species: *Sericoleon paessleri* Esben-Petersen, orig. design. *New Synonymy.*
- Taxonomy: Banks (1943:166); Stange (1963:810; 1968:56).
- gentilis* (Banks) 1943:171 (as *Sosa*). Hol. ♂, Kartabo, British Guiana, XI.4 (MCZ). *New Comb.*
- paessleri* (Esben-Petersen) 1932:115. (as *Sericoleon*). Hol. ♀, Taltal (Antofagasta), Chile, I.30.1906 (Copenhagen). *New Comb.*
- punctipennis* Esben-Petersen 1927:348. Hol. (sex undet.), St. Augustine, Trinidad, V.20.1925 (BM).

=*Elachyleon punctipennis pulchellus* Esben-Petersen 1932:113. Syntypes: ♀, Las Mercedes, Costa Rica, IV.27.1922 (Hamburg, destroyed); sex undet., Brazil (Berlin?).

Taxonomy: Banks (1943:168); Stange (1963:815; 1968:56).

Distribution: Neotropical (Mexico to Argentina).

serranus (Navás) 1927:50 (as *Oroleon*). Hol. ♀, Alta Gracia, La Granja, Sierras de Córdoba, Argentina, I.8.1928 (Buenos Aires).

Taxonomy: Stange (1968:57).

Genus **Eremoleon** Banks

Eremoleon Banks 1901:366. Type-species: *Myrmeleon macer* Hagen, orig. design.

=*Incamoleon* Banks 1913a:229. Type-species: *Psammoleon punctipennis* Banks, orig. design. *New Synonymy*.

=*Glenopsis* Banks 1913a:229. Type-species: *Myrmeleon anomalus* Rambur, orig. design.

=*Sosa* Navás 1914a:218. Type-species: *Sosa conspicuus* Navás, orig. design. *New Synonymy*.

=*Segura* Navás 1914c:18. Type-species: *Segura vitreus* Navás, orig. design.

=*Belen* Navás 1921:119. Type-species: *Belen cerverinus* Navás, orig. design.

=*Cortesi* Navás 1924:107. Type-species: *Cortesi genini* Navás, orig. design. *New Synonymy*.

=*Novulga* Navás 1925:189. Type-species: *Novulga mexicana* Navás, orig. design.

=*Dobla* Navás 1926:428. Type-species: *Dobla arcuata* Navás, orig. design. *New Synonymy*.

=*Joergenia* Esben-Petersen 1932:118. Type-species: *Joergenia pulchra* Esben-Petersen, orig. design. *New Synonymy*.

=*Antilloleon* Banks 1943:168. Type-species: *Glenurus cerverai* Navás, orig. design. *New Synonymy*.

Taxonomy: Navás (1916:232; 1917:275); Banks (1928:69-71; 1942:144); Adams (1957:85; 1958:6); Alayo (1968:62, 70); Stange (1968:57).

anomalus (Rambur) 1842:388 (as *Myrmeleon*). Type (?s), Colombia (not located).

=*Glenurus mollis* Gerstaecker 1888:101. Hol. (sex undet.) Colombia (Greifswald).

Taxonomy: Banks (1913a:229; 1943:171); Navás (1916:232); Stange (1968:57).

Distribution: Neotropical (Colombia, Venezuela, Brazil, Argentina).

capitatus (Navás) 1913:52 (as *Formicaleo*) Hol. (sex undet.), Rio de Janeiro, Brasil, VI.1911 (not located). *New Comb.*

serverai (Navás) 1921:118 (as *Glenurus*). Hol. ♀, Santiago (de las) Vegas, Habana, Cuba, VIII.23.1907 (MCZ). *New Comb.*

Taxonomy: Banks (1943:68); Alayo (1968:68).

serverinus (Navás) 1921:120 (as *Belen*). Hol. ♀, Río Almendares, Habana, Cuba, VIII.1.1915 (MCZ).

Taxonomy: Adams (1957:6); Alayo (1968:70).

conspicuus (Navás) 1914a:219 (as *Sosa*). Hol. ♂, Brasil (Vienna). *New Comb.*

femoralis (Banks) 1942:146 (as *Psammoleon*). Hol. (sex undet.), 20 miles N.W. La Paz, Lower California VII.16.1938 (CAS). *New Comb.*

genini (Navás) 1924:108 (as *Cortesius*). Syntypes (sex undet.), Veracruz, Mexico, 1921 (Paris). *New Comb.*

=*Dobla arcuata* Navás 1926:428. Hol. ♀, San José, Costa Rica (Paris). *New Synonymy.*

gracile Adams 1957:90. Hol. ♀, Riverside, California, VIII.31.1939 (CAS).

impluviatus (Gerstaecker) 1893:30 (as *Glenurus*). Hol. ♀, Locotal, Bolivia (Greifswald), *New Comb.*

insipidus Adams 1957:88. Hol. ♂, 5 miles S. San Miguel, Lower California, VII.20.1938 (MCZ).

Distribution: Nearctic (Mohave-Colorado Desert; Vizcaino Desert).

longior Banks 1938a:225. Syntypes ♀ ♀, Yucatan, Mexico (MCZ).

Taxonomy: Adams (1957:92).

macer (Hagen) 1861:236 (as *Myrmeleon*). Hol. (sex undet.), Mexico (not located).

=*Segura vitreus* Navás 1914c:18. Hol. ♂, Cuernavaca, Mexique, 1871 (Paris).

=*Novulga mexicana* Navás 1925:189. Hol. ♂, Veracruz, Mexique, 1921 (Paris).

=*Hesperoleon atomarius* Navás 1933b:105. Hol. (sex undet.), Cuernavaca, Mexico, 1929-30 (Hamburg, destroyed). *New Synonymy.*

Taxonomy: Banks (1928:70); Adams (1957:86).

Distribution: Nearctic (Arizona); Neotropical (Mexico).

nigribasis Banks 1920:329. Syntypes ♂, ♀, St. George, Utah, VI.5,6 (MCZ)

=*Eremeleon affine* Banks 1942:144. Hol. ♂, Miraflores, Lower California, VII.8.1938 (CAS).

Taxonomy: Banks (1928:71); Adams (1957:91).

Distribution: Nearctic (deserts).

ornatipennis (Alayo) 1968:69 (as *Antilloleon*). Hol. ♂, Soroa, Pinar del Río, Cuba, IV.1963 (Havana). *New Comb.*

pallens Banks 1941c:101. Syntypes, Picacho Peak, Arizona, VII.23 (MCZ).

Taxonomy: Adams (1957:92).

peterseni (Banks) 1922:59 (as *Glenopsis*). Lect. ♀, Chanchamayo, Peru, XI (MCZ). *New Comb.*

Taxonomy: Stange (1961:674).

psilocerus (Gerstaecker) 1893:32 (as *Glenurus*). Hol. (sex undet.), Merida, Venezuela (Greifswald). *New Comb.*

Taxonomy: Banks (1922:59; 1943:172).

pulchra (Esben-Petersen) 1932:118 (as *Joergenia*). Hol. ♀, Paraguay, II. 1932 (Copenhagen). *New Comb.*

punctipennis (Banks) 1910:147 (as *Psammoleon*). Hol. ♀, San Antonio, Colombia (MCZ). *New Comb.*

=*Formicaleo tetrastictus* Navás 1913:51. Types(?), Venezuela (not located).

=*Formicaleo stictopterus* Navás 1916:232. New name for *punctipennis* Banks 1910. (nomen nudum).

Taxonomy: Banks (1913a:299; 1943:169); Stange (1968:58).

Distribution: Neotropical (Colombia to Argentina).

sectoralis Adams 1958:7. Hol. ♀, 5 miles S. San Miguel, Lower California, VII.20.1938 (CAS).

triguttatus (Navás) 1914c:19 (as *Formicaleo*). Hol. ♀, San Pedro de Sula, Honduras (Vienna). *New Comb.*

Genus **Glenurus** Hagen

Glenurus Hagen 1866:372. Type-species: *Formicaleo grata* Say, design. by Banks (1928:67).

=*Ledoscius* Navás 1918:493. Type-species: *Ledoscius penningtoni* Navás, orig. design.

SYNONYMY: Navás (1924:107).

gratus (Say) 1839:45 (as *Formicaleo*).

=*Myrmecoleon roseipennis* Burmeister 1839:995. Hol. (sex undet.), Nord-Amerika (Halle).

Taxonomy: Walker (1853:392); Hagen (1861:225; 1866:405); Banks (1892:360; 1928:67).

Distribution: Nearctic (East 100° Meridian).

heteropteryx Gerstaecker 1885:17. Hol. ♀, Chiriqui (Greifswald).

=*Glenurus discors* Navás 1920:202. Hol. ♀, La Trinité, 1916 (Paris).

Taxonomy: Banks (1922:58); Navás (1922b:187; 1935:362).

Distribution: Neotropical (Panama, Venezuela, Trinidad, Ecuador).

incalis Banks 1922:58. Syntypes, Chanchamayo, Peru (MCZ).

luniger Gerstaecker 1893:125. Hol. ♀, Chiriqui (Greifswald).

Taxonomy: Banks (1938:420).

Distribution: Nearctic (Arizona); Neotropical (Mexico to Panama).

peculiaris (Walker) 1859:194 (as *Myrmeleon*). Hol. ♀, Brazil (BM).

- =*Glenurus brasiliensis* Navás 1920:416. Lect. ♀, São Sebastião, Brasil (not located). *New Synonymy*.
Taxonomy: Hagen (1866:405); Banks (1922:58); Navás (1923:771).
penningtoni (Navás) 1918:493 (as *Ledoscius*). Hol. ♂, La Rioja, Argentina (not located).
=*Glenurus croesus* Banks 1922:59. Syntypes, Sara, Bolivia, 450 m. (MCZ).
Taxonomy: Navás (1922b:187; 1924:107).
Distribution: Neotropical (Bolivia, Argentina).
proi Navás 1929:17. Hol. ♀, Colima, Mexico (Paris).
snowii Banks 1907:100. Hol. ♀, Baboquivari Mts., Arizona (MCZ).
Taxonomy: Banks (1928:67, 69).

Genus **Navasoleon** Banks

- Navasoleon* Banks 1943:168. Type-species: *Gymnocnemia boliviana* Banks, orig. design.
Taxonomy: Stange (1963:810).
boliviana (Banks) 1929:330 (as *Gymnocnemia*) Hol. ♀, Río Longo, Bolivia (MCZ).
Taxonomy: Banks (1943:168).
bosqui (Navás) 1922:258 (as *Gymnocnemia*). Hol. ♀, Santiago del Estero, Argentina (not located).
Taxonomy: Stange (1968:58).
leptocera (Navás) 1915:125 (as *Gymnocnemia*). Hol. (sex undet.) Catamarca, Argentina, I.21.1910 (Buenos Aires).
Taxonomy: Stange (1968:58).

Genus **Pachyleon** Stange

- Pachyleon* Stange 1970: Type-species: *Pachyleon alvarengai* Stange, orig. design.
alvarengai Stange. Hol. ♂, Jacaré, Mato Grosso, Brazil, XI.1961 (LACM).

Genus **Psammoleon** Banks

- Psammoleon* Banks 1899:69. Type-species: *Myrmeleon ingeniosus* Walker, orig. design.
=*Diazus* Navás 1914:220. Type-species: *Diazus clavatus* Navás, orig. design.
Taxonomy: Banks (1913:226; 1928:60-67; 1942:166; 1943:169); Alayo (1968:65).
albovaria (Banks) 1942:146 (as *Puren*). Hol. (sex undet.), Venancio, Lower California, VII.17.1938 (CAS). *New Comb*.
arizonensis Banks 1935:53. Syntypes: 1 ♀, Tucson, Arizona (MCZ); 2 ♀ ♀, Phoenix, Arizona (MCZ).

Distribution: Nearctic (Arizona-Sonora Desert; Mohave-Colorado Desert).
banksi Esben-Petersen 1932:115. Hol. ♂, Amapala, Honduras, XI.12.1907
(Hamburg, destroyed).

bipunctatus (Navás) 1915:465 (as *Formicaleo*). Hol. ♀, Guyana Francesa
(Paris).

Taxonomy: Banks (1943:170).

bistictus (Hagen) 1861:235 (as *Myrmeleon*). Hol. (sex undet.), Cuba
(Berlin?).

Taxonomy: Navás (1921:117); Banks (1928:61; 1941:177); Alayo
(1968:65).

Distribution: Neotropical (so. Florida, West Indies, Yucatan, Mex.).

cautus (Walker) 1853:349 (as *Myrmeleon*). Hol. ♂, Brazil (BM).

=*Feinerus nebulosus* Navás 1922:21. Hol. ♀, Perú 1920 (Paris). *New
Synonymy*.

Taxonomy: Banks (1943:170).

clavatus (Navás) 1914:221 (as *Diazus*). Hol. ♂, Amazonas 1860 (Vienna).
New Comb.

connexus (Banks) 1920:329 (as *Puren*). Hol. ♂, San Jacinto Mts., California
VI.25 (MCZ).

Taxonomy: Banks (1928:61, 64).

cubensis Alayo 1968:67. Hol. (sex undet.), Tortuguilla, Guantánamo, Or-
iente, Cuba, VI.1964 (Havana).

debilis (Gerstaecker) 1893:44 (as *Formicaleo*). Hol. ♀, Chiriqui (Greifs-
wald).

Taxonomy: Banks (1943:170).

Distribution: Neotropical (Panama; Colombia).

decepiens Banks 1935:54. Syntypes: 1 ♂, Georgia (MCZ); sex undet.,
Shreveport, Louisiana (MCZ).

guttipes Banks 1906:99. Hol. ♂, Tryon, North Carolina (MCZ).

Taxonomy: Banks (1928:61, 63).

imbellis (Banks) 1941:102 (as *Puren*). Hol. ♀, Port au Prince, Haiti, XI.20
(MCZ). *New Comb.*

ingeniosus (Walker) 1853:337 (as *Myrmeleon*). Syntypes, Brazil & no data
(BM).

Taxonomy: Hagen (1861:236; 1866:404); Banks (1899:69; 1906:99;
1943:169).

Distribution: Neotropical (Colombia, Brazil).

iniquus (Navás) 1914:208 (as *Formicaleo*) new name for *Formicaleo in-
aequalis* Navás 1913:51 (Preoccupied by *F. inaequalis* Navás 1912): Hol.
(sex undet.), Amapala, Honduras, XI (not located). *New Comb.*

inscriptus (Hagen) 1861:230 (as *Myrmeleon*). Hol. ♂, Pecos River, Western
Texas (MCZ).

Taxonomy: Hagen (1866:424); Banks (1904:106; 1928:66).

Distribution: Nearctic (Arizona-Sonora Desert).

leachii (Guilting) 1829:49 (as *Formicaleo*). Types (?), Jamaica (not located).

minor Banks 1928:62. Lect. ♀, Dry Tortugas, Loggerhead Key, Florida, VI.1917 (MCZ).

Taxonomy: Banks (1941:176, 177); Stange (1961:674); Alayo (1968:66).

Distribution: Neotropical (So. Florida; West Indies).

normalis Banks 1942:145. Hol. ♀, Venancio, Lower California, VII.17.1938 (CAS).

nubipennis (Navás) 1917:275 (as *Formicaleo*). Hol. (sex undet.), Coachí, Colombia, VI.1915 (not located). *New Comb.*

parallela Banks 1935:54. Syntypes, Honduras (MCZ).

parvulus Banks 1920:331. Hol. ♂, Chapada, Brazil (MCZ).

Taxonomy: Banks (1943:170).

posticatus Banks 1941:3. Hol. (sex undet.), Colombia (AMNH).

Taxonomy: Banks (1943:169).

reductus Banks 1941:177. Hol. ♂, Stakes Bay, Cayman Brac, Cayman Islands (MCZ).

serrei (Navás) 1920:201 (as *Formicaleo*). Hol. ♂, La Trinité, 1914 (Paris). *New Comb.*

=*Formicaleo chaperi* Navás 1922:256. Hol. ♂, Venezuela, 1885 (Paris). *New Synonymy.*

Taxonomy: Banks (1943:170).

sinuatus Currie 1903:275. Hol. ♂, Santa Rita Mts., Arizona, V.31 (USNM).

=*Psammoleon serpentinus* Navás 1922:185. Hol. (sex undet.), Jemez Springs, New Mexico, VII.1916 (Zaragoza).

Taxonomy: Banks (1928:5, 64).

zayasi Alayo 1968:67. Hol. ♀, Península de Guanahacabibes, Pinar del Río, Cuba, 1956 (Private coll. Zayas, Habana).

RESUMEN

Revisión Genérica y Catálogo de la Tribu Glenurini del Hemisferio Occidental con la Descripción de un Nuevo Género y Especies de Brasil.

Estudios sistemáticos de la Glenurini del hemisferio occidental han llevado a grandes cambios en su clasificación. Ocho nombres genéricos han sido reducidos a sinónimos y un género y especie nueva, *Pachyleon alvarengai* es descrito de Brasil. Estos sinónimos son: *Elachyleon* Esben-Petersen 1927 (= *Sericoleon* Esben-Petersen 1932); *Eremoleon* Banks 1901 (= *Incamoleon* Banks 1913, = *Sosa* Navás 1914, = *Cortesius* Navás 1924, = *Dobla* Navás 1926, = *Joergenia* Esben-Petersen 1932, = *Antilloleon* Banks 1943); *Psammoleon* Banks 1899 (= *Diazus* Navás 1914). Se dan ahora ocho géneros válidos. Se incluyen descripciones y observaciones sobre cada género además

de una clave para su identificación. Se discute la posición sistemática de la tribu Glenurini que se pasa a la subfamilia Myrmeleontinae, con la inclusión de los géneros de la tribu Dimarellini. Se agrega un catálogo sinóptico de las especies y géneros de la tribu con datos sobre los tipos y se indican muchas combinaciones nuevas además de cuatro sinónimos específicos nuevos. Estos son: *Psammoleon cautus* (Walker) 1853 (= *Feinerus nebulosus* Navás 1922); *Psammoleon serrei* (Navás) 1920 (= *Formicaleo chaperi* Navás 1922); *Glenurus peculiaris* (Walker) 1859 (= *Glenurus brasiliensis* Navás 1920); *Eremoleon macer* (Hagen) 1861 (= *Hesperoleon atomarius* Navás 1933).

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